

ADDITIONAL MATERIALS TOWARD A MONOGRAPH OF THE GENUS
CALLICARPA. IV

Harold N. Moldenke

CALLICARPA BRACTEATA Dop

Shrub; branches tetragonal, slender, puberulous; petioles 2-3 mm. long; leaf-blades membranous, elliptic-oblong, 7-8 cm. long, 2 cm. wide, acuminate at the apex, serrate along the margins except at the base, long-attenuate and decurrent into the petiole at the base, almost glabrous above except for the venation, sparsely stellate-pilose on the vein and veinlet reticulation beneath and very closely yellow-glanduliferous; midrib slender; secondaries 14-16, very slender, slightly arcuate and ascending; veinlet reticulation hardly conspicuous; cymes lax, dichotomous, many-flowered, 5-6 cm. long, 3-4 cm. wide, puberulous; peduncles 2-2.5 cm. long; bractlets minute; pedicels very short; calyx 1 mm. long, stellate-pubescent, the rim truncate, with 4 very minute teeth; corolla violet, 2.5 mm. long, glabrous and glandulose, the tube dilated, the lobes 4, subequal, 0.5 mm. long, rounded; stamens 4, exserted; filaments inserted at the base of the corolla-tube; anthers slightly glandulose; style equaling the stamens; stigma capitate; ovary villous; drupes white.

The type of this species was collected by Henri François Bon (no. 2659) at Doi Ngang, Tonkin, Indochina. Dop (1932) says "Cette espèce est voisine du C. longifolia Lam. Elle s'en distingue aisément par les pédoncules des cymes beaucoup plus longs, les bractées foliacées. La longueur du pédoncules la rapprochera du C. longipes Dunn de Chine et de Hongkong; mais les feuilles longuement attenues, la calice à dents très petites, l'éloignent nettement du C. longipes à feuilles arrondies ou cordées à la base et à calice divisé jusqu'au milieu."

Nothing is known to me of this taxon besides what is stated in the literature.

CALLICARPA BREVIPES (Benth.) Hance, Ann. Sci. Nat., ser. 5, 5: 233. 1866.

Additional & emended synonymy: Callicarpa longifolia var. brevipes Benth., Fl. Hongk. 270. 1861. Callicarpa breviceps Hance, Journ. Linn. Soc. Lond. Bot. 13: 116, sphalm. 1873. Callicarpa brevipes Hance apud Maxim., Mél. Biol. 12: 509. 1886. Callicarpa longifolia Hook. apud P'ei, Mem. Sci. Soc. China 1 (3): 45, in syn. 1932 [not C. longifolia Auct., 1965, nor Benth., 1966, nor Blume, 1936, nor Hance, 1932, nor Hemsl., 1916, nor L., 1820, nor Lam., 1783, nor Roxb., 1827, nor Vahl, 1936]. Callicarpa japonica var. dichotoma Bakh. apud P'ei, Mem. Sci. Soc. China 1 (3): 45, in syn. 1932. Callicarpa brecipes (Benth.) Hance apud P'ei, Mem. Sci. Soc. China 1 (3): 48, sphalm. 1932. Callicarpa brenipes Hance ex Moldenke, Résumé Suppl. 14: 6, in syn. 1966.

Bibliography: Lindl., Bot. Reg. 10: pl. 864. 1824; Hook., Exot. Fl. 2: pl. 133. 1825; Benth., Fl. Hongk. 270. 1861; Hance, Ann. Sci. Nat., ser. 5, 5: 233. 1866; Hance, Journ. Linn. Soc. Lond. Bot. 13: 116. 1873; Maxim., Bull. Acad. Sci. St.-Pétersb. 31: 77-78. 1886; Maxim., Mél. Biol. 12: 504, 507, & 509. 1886; Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. 26: 525. 1890; Jacks. in Hook. f. & Jacks., Ind. Kew. 1: 386. 1893; Dunn, Kew Bull. Misc. Inf. 1912: 368. 1912; Dunn & Dutcher, Kew Bull. Misc. Inf. Addit. Ser. 10: 202 & 203. 1912; Lévl., Cat. Pl. Yun-Nan. 277. 1917; Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 25 & 26. 1921; Chung, Mem. Sci. Soc. China 1 (1): 225. 1924; E. D. Merr., Lingnan Sci. Journ. 5: 157. 1927; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 16, 45-46, 48, 50, & 56. 1932; P. Dop, Bull. Soc. Hist. Nat. Toulouse 64: 499-501, 507, & 510-512. 1932; Moldenke in Fedde, Repert. Spec. Nov. 39: 297 & 299 (1936) and 40: 92-93, 98, 120, & 129. 1936; Moldenke, Geogr. Distrib. Avicenn. 35. 1939; Moldenke, Prelim. Alph. List Invalid Names 9 & 11. 1940; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 56, 58, 59, 71, & 86. 1942; Moldenke, Alph. List Invalid Names 8 & 10. 1942; Moldenke, Alph. List Cit. 2: 558 (1948) and 3: 658, 718, & 932. 1949; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 130, 135, 143, 156, & 177. 1949; Moldenke, Phytologia 3: 140 (1949) and 4: 41, 75, & 76. 1952; Moldenke, Biol. Abstr. 26: 1471. 1952; Moldenke, Résumé 167, 173, 174, 187, 213, 241, 245, & 443. 1959; Moldenke, Résumé Suppl. 3: 19 & 30 (1962) and 14: 3 & 6. 1966.

Illustrations: Lindl., Bot. Reg. 10: pl. 864. 1824; Hook., Exot. Fl. 2: pl. 133. 1825.

Hooker's original description (1825) was "Foliis lanceolato-acuminatis superne serratis adultis glabriusculis, pedunculo petiolum paullulum superante.....A shrub, with erect weak branches, which are obscurely four-sided, and clothed, especially the younger ones, with stellated pubescence of which the rays are exceedingly numerous, and such as to give it a mealy appearance to the naked eye. Leaves always opposite, 5 or 6 inches in length, lanceolate, somewhat waved, serrated in the upper part, the extremity acuminate and nearly entire, dark green above, paler beneath, the younger ones covered with a stellated pubescence, the older ones pubescent only on the nerves beneath, all of them petiolated, with the petioles scarcely more than half an inch long. Cymes axillary, small. The peduncles or main stalks scarcely exceeding the length of the petiole, the pedicels short, having minute, linear-lanceolate bracteas at their base. Flowers small, drooping when fully expanded. Calyx small, cup-shaped, with four short and very obtuse teeth. Corolla subcampanulate, 4-lobed, the lobes erecto-patent, of a white colour, fringed with pink. Stamens 4, inserted at the base of the corolla, and exceeding it in length. Filaments white, glabrous. Anthers oblong, yellow. Pistil: germen superior, small, spherical; style about as long as the stamens, filiform, white; stigma obtuse, scarcely capitate. Berries white (Roxb.). Sent to me by Mr. Shepherd as a species of Callicarpa which was received by him from China, and which at present has reached only to a height of two feet in the stove of the Botanic

Garden at Liverpool. It appears to me to agree in almost every particular with the figure and description of the C. longifolia of Lamarck, which that author states to be found in Malacca by Sonnerat. Roxburgh's character, above referred to, described the leaves as long-petioled, and as downy underneath: this latter circumstance I find to exist only in the young leaves; in the older foliage the pubescence, if present, is confined wholly to the veins on the under side. The plant described in the Flora Indica inhabits Prince of Wales Island. Very nearly allied to the present species, as far as I can collect from the characters, are the C. japonica of Thunberg, and the C. purpurea of Jussieu..... But the latter, as described by Dr. Wallich, has leaves only two inches long, while the former has no pubescence, short stamens and style, and an acute stigma: if, too, Thunberg be correct in stating that his C. japonica has 'Filamenta germini inserta', it probably belongs to an altogether different genus."

Hance (1866) says "Pace Schauerii Benthamique, vera Callicarpa longifolia Lam., quae nullibi in insula Hongkong occurrit, licet a memet prope Cantonem lecta, differt specifice a planta quam pro varietate habat Benthamius, cymis multo majoribus, amplioribus, floribus fructibusque minoribus ramisque glabris. Stirps Hongkongensis est C. brevipes mihi."

Maximowicz (1886) cites: CHINA: Kwangtung: Hance s.n. [prov. Canton]. HONGKONG: Hance s.n., Wright s.n. He comments "Cum Hanceo video: ramos flavido furfuraceo pubescentes, folia haud viscida distanter obiter serrata, cymas fere sessiles, flores pauciores maiores, antheras magnas partim tantum exsertas, fructus sphaericos piperiformes. In Callicarpa longifolia Lam. vero rami glabri, folia longiora integra v. minute serrulata, recentia valde viscida, cymae laxoris pedunculi longiusculi, flores numerosiores triplo minores, antherae late ovales decuplo minores, filamenta capillaria longe exserta, fructus apice planus plus duplo minor.....Planta hongkongensis a Bentham Callicarpa longifolia var. brevipes dicta sistit Callicarpa brevipedem Hce., de qua atque ejus differentia a Callicarpa longifolia vide infra."

P'ei (1932) describes this plant as follows: "A shrub more or less pubescent or subglabrous. Leaves linear-lanceolate, 9.5 to 21 cm. long, 1.5 to 3.5 cm. wide, subglabrous or pubescent and glandular beneath, glabrous above, entire or crenately serrate, chartaceous, lateral nerves 8 to 10 on each side of the midrib. Petioles nearly none, if present, not exceeding 5 mm. in length. Cymes shortly peduncled; peduncles not exceeding 5 mm. in length. Calyx truncate, with 4 rudimentary teeth, glandular without, glabrous within, about 2 mm. high. Corolla 4-lobed, glandular without, twice as long as the calyx. Stamens 4; filaments just as long as the corolla tube; anthers exserted, oblong, 1.5 mm. in length, connective densely glandular. Style exceeding the stamens, glabrous. Ovary densely glandular. Fruit glandular, about 3 mm. in diameter.....Hooker's description was based on a living plant from China, and he thought that it represented Callicarpa

longifolia Lamarck. Bentham recognized that the plant Hooker described was not Lamarck's species and treated it as a variety brevipes. Hence a few years later raised this to specific rank as Callicarpa brevipes (Benth.) Hance." P'ei also says that C. longissima (Hemsl.) Merr. differs from C. brevipes by having long narrow leaves with the leaf-base attenuate.

Léveillé (1916), in describing his C. mairei, says "Affinis C. Brevipes, a qua distincta foliis frequenter dentatis et floribus lutescentibus". I regard Léveillé's C. mairei as C. bodinieri var. giraldii (Hesse) Rehd. Bakhuizen van den Brink (1921) regards C. brevipes as a synonym of what he calls C. japonica var. dichotoma (Lour.) Bakh. [=C. dichotoma (Lour.) K. Koch].

The C. longifolia of Bentham and of Hance, referred to in the synonymy above, belong to the synonymy of C. longissima (Hemsl.) Merr.; that of Blume, Linnaeus, Roxburgh, and Vahl is C. longifolia Lam.; that of Hemsley and of Diels is, in part, C. bodinieri var. giraldii (Hesse) Rehd. and, in part, C. japonica var. angustata Rehd.

In my 1936 work I regarded C. brevipes f. serrulata P'ei and f. yingtakensis P'ei as synonyms of C. brevipes, but I now regard the former as a distinct form and the latter as a synonym of C. collina Diels.

Collectors describe C. brevipes as a small shrub, 1 m. tall, the flowers pink, the young fruit green, growing in grasslands and open thickets, flowering in September, fruiting in August and September. They record the vernacular name "mata poene". The boundaries between the typical form of the species and its several named forms are very obscure and ill-defined. I also have doubts whether this very narrow- almost sessile-leaved taxon is the original of Bentham, who compared his plant with C. longifolia of Lamarck. Bentham's type must be seen in order to clarify this point.

Material has been misidentified and distributed in herbaria under the names C. brevipetiolata Merr., C. eriophylla Ridl., and C. longifolia Lam. On the other hand, the Clemens & Clemens 4499 & 5055, distributed as C. brevipes, are actually C. brevipes f. annamensis Moldenke [the first-mentioned number being the type collection], W. Y. Chun 6803, R. C. Ching 2105, F. A. McClure 2664 [Herb. Canton Chr. Coll. 9222], and Peng, Tak, & Kin 296 [Herb. Canton Chr. Coll. 12295] are C. brevipes f. serrulata P'ei [the second and third being cotype collections; the last-mentioned being a cotype collection of f. subglabra P'ei]; Herb. Canton Chr. Coll. 12295 & 12556 are C. longissima (Hemsl.) Merr. [both being cotype collections of C. brevipes f. subglabra P'ei]; and R. C. Ching 1760 is C. rubella var. dielsii (Lévl.) Li [the type collection of C. rubella var. hemsleyana f. subglabra P'ei].

Forbes & Hemsley (1890) cite Champion s.n., Hance s.n., Wilford

s.n., and C. Wright s.n. from Hongkong, deposited in the Kew and British Museum herbaria. P'ei (1932) cites Chen 5005, 5307, & 5648 from Szechuan, China.

In all, 17 herbarium specimens and 4 mounted photographs have been examined by me.

Additional citations: CHINA: Kwangsi: Tsoong 4589 (Ca-225792). HONGKONG: Ford s.n. [Hongkong] (N); C. Wright s.n. [Hong Kong] (W-44908). CHINESE COASTAL ISLANDS: Hainan: F. C. How 73616 (Bi, S); Liang 62267 (S), 62467 (La, N); Wang 33985 (N). INDONESIA: GREATER SUNDA ISLANDS: Sumatra: Boeea 8017 (S). CULTIVATED: England: Shepherd s.n. [Hort. Liverpool] (N). Hongkong: Herb. Hongkong Bot. Gard. s.n. (E--photo, N--photo, N--photo, S, S, Z--photo).

CALLICARPA BREVIPES f. ANNAMENSIS Moldenke, Phytologia 4: 41. 1952.

Bibliography: Moldenke, Phytologia 4: 41 & 76. 1952; Moldenke, Biol. Abstr. 26: 1471. 1952; Moldenke, Résumé 175 & 443. 1959.

This form differs from the typical form of the species and from the several other described forms in having its leaf-blades decidedly elliptic, the larger ones about 15 cm. long and 6 cm. wide, minutely serrulate from below the middle to below the terminal acumination, attenuate-acute at the base.

The type of this form was collected by Joseph and Mary Knapp Clemens (no. 4499) at Tourane or its vicinity, Annam, Indochina, between May and July, 1927, and is deposited in the Britton Herbarium at the New York Botanical Garden. The collectors describe it as a shrub with lavender-pink flowers. Material has been misidentified and distributed in herbaria as C. brevipes (Benth.) Hance.

In all, 4 herbarium specimens, including the type, have been examined by me.

Citations: INDOCHINA: Annam: Clemens & Clemens 4499 (Ca-340416--isotype, N-type, Ut-138a--isotype), 5055 (Ca-340416).

CALLICARPA BREVIPES f. SERRULATA P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 47. 1932.

Synonymy: Callicarpa brevipes f. subglabra P'ei ex Moldenke, Résumé Suppl. 3: 30, in syn. 1962.

Bibliography: P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 47. 1932; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 56, 58, & 86. 1942; Moldenke, Alph. List Cit. 1: 284 (1946) and 3: 718. 1949; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 130, 135, & 177. 1949; Moldenke, Résumé 167, 174, & 443. 1959; Moldenke, Résumé Suppl. 3: 19 & 30. 1962.

This form differs from the typical form of the species in having its leaf-blades ovate-lanceolate, dentate, acuminate at the apex, subcordate at the base, and the fruits 5 mm. in diameter.

P'ei (1932) also says "This form differs from the type by its

leaves which are widened at the middle and distinctly toothed and rounded to subcordate at the base". It was based by him on four collections: (1) Ching 2198, collected at Taisuan, Chekiang, China, in July 1924, (2) Ching 2105, collected at 500—900 meters altitude between Pingyung and Taisuan, Chekiang, in July 1924, (3) Chun 6803, collected at Hongkong in November 1928, and (4) F. A. McClure 2664 [Herb. Canton Chr. Coll. 9222], collected at T'ahon, Hainan Island, in April 1922.

Collectors describe the plant as a slender, small, woody shrub, 0.8—1.5 meters tall, sometimes scandent, with a few branches, the flowers white or white and yellow, and the young fruit green or pale-green. It has been found growing in forests, forested ravines, or thickets, in the shade of dense woods, along roadsides, in light woods, along the borders of streams, or climbing on rocks, at altitudes of 1000 to 1800 feet, flowering in April, May, and July, fruiting in January and August. The flowers are described as "white" on How 72007, F. A. McClure 2664, and Tsui 199, and as "white and yellow" on Peng, Tak, & Kin 296.

The type of C. brevipes f. subglabra was collected by To Kang Peng, Ts'ang Wai Tak, and Ts'ang Un Kin (no. 296) in Kwangtung, China, and is deposited in the herbarium of the University of California at Berkeley.

Callicarpa brevipes f. serrulata differs from C. longissima (Hemsl.) Merr. (which has entire or subentire leaf-blades) by its serrate or serrulate leaves. Material has been misidentified and distributed in herbaria under the names C. brevipes Hance, C. brevipes (Benth.) Hance, and C. longissima (Hemsl.) Merr.

In all, 11 herbarium specimens, including type or cotype material of both names involved, and 2 mounted photographs have been examined by me.

Citations: CHINA: Chekiang: R. C. Ching 2105 (W—1246179—cotype). Kwangtung: Peng, Tak, & Kin 296 [Herb. Canton Chr. Coll. 12295] (Ca—12295); Tsui 199 (N). CHINESE COASTAL ISLANDS: Hainan: Chun & Tso 43402 (N); How 72007 (Bz—17295), 72406 (Bz—17296); Liang 64235 (N); F. A. McClure 2664 [Herb. Canton Chr. Coll. 9222] (Ca—366337—cotype, N—photo of cotype, Ph—cotype, Z—photo of cotype); Wang 36848 (N). HONGKONG: W. Y. Chun 6803 (Ca—374155).

CALLICARPA BREVIPETIOLATA Merr., Philip. Journ. Sci. Bot. 14: 249. 1919.

Synonymy: Callicarpa eriophylla Ridl., Journ. Malay. Br. Roy. Asiat. Soc. 1: 84. 1923.

Bibliography: E. D. Merr., Philip. Journ. Sci. Bot. 14: 249. 1919; H. N. Ridl., Journ. Malay. Br. Roy. Asiat. Soc. 1: 84. 1923; A. W. Hill, Ind. Kew. Suppl. 6: 34 (1926) and 7: 36. 1929; Fedde & Schuster in Just, Bot. Jahresber. 59 (2): 416. 1939; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 63, 64, & 86.

1942; Moldenke, Alph. List Cit. 1: 254. 1946; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 143, 144, & 177. 1949; Moldenke, Phytologia 4: 121—123. 1952; Moldenke, Résumé 158, 160, 187, 189, & 443. 1959; Moldenke, Résumé Suppl. 3: 23 (1962) and 4: 7. 1962.

Bush, open bush, or shrub, 4—12 feet tall, or small tree; branchlets terete, 1.5—2 mm. in diameter, very densely and uniformly stellate-tomentose with pale-brownish eglandular tomentum; leaves opposite; petioles 1—2.5 mm. long, densely stellate-tomentose or woolly; leaf-blades chartaceous, brittle when dry, lanceolate or oblong-lanceolate, 7—18 cm. long, 1.5—7 cm. wide, narrowed to the slenderly acuminate apex, denticulate or rather finely dentate along the margins, abruptly and broadly rounded or cordate at the base, brownish-olivaceous and more or less pubescent with short simple hairs or thinly closely hairy above, very densely and uniformly stellate-tomentose with white woolly or pale-brownish eglandular tomentum beneath; secondaries 8—12 on each side of the midrib, thick, not prominent; cymes axillary, solitary, about 1.5 cm. wide, stellate-tomentose; peduncles 5—10 mm. long; pedicels 4 mm. long during anthesis; calyx cupuliform, tomentose; corolla lavender, deep mauve-violet, old-rose, or rose-purple, infundibular, about 1.25 mm. long, the tube narrowed at the base, dilated upwards, the lobes short; stamens exserted; anthers oblong; style exserted; fruiting-cymes dense, subglobose, 1—2 cm. in diameter; fruiting-pedicels about 6.25 mm. long; fruiting-calyx shallow, about 2 mm. wide, stellate-pubescent, the rim 4-toothed; fruits very numerous, crowded, globose, pink or lovely mauve-purple, 2—2.5 mm. in diameter, black and rugose when dry.

The type of this species was collected by Harley Harris Bartlett and Carl Downey La Rue (no. 323) at Kampong Bintang Mariah, Karoland, on the east coast of Sumatra, Indonesia, on August 10, 1918, and was deposited in the herbarium of the Philippine Bureau of Science at Manila, but is now destroyed. The type of C. eriophylla was collected by Willem Hendrik de Vriese somewhere in Java and is deposited in the herbarium of the Royal Botanic Gardens at Kew.

Ridley (1923) comments "Abundant in the open country among la lang. A very pretty shrub with its white leaves and bright coloured flowers and fruit". Merrill (1919) records the common name "laoe gappa gappa" and comments that "The alliance of this species is manifestly with Callicarpa rubella Lindl., from which it is especially distinguished by its very dense stellate-tomentose indumentum, which completely covers the lower surface of the leaves." Both Lam and Bakhuizen van den Brink reduce C. brevipetiolata to synonymy under what they call C. cuspidata Roxb. and which I regard as a synonym of C. pedunculata R. Br.

The species has been found growing in thickets, pine forests, and second growth, as well as on open hillsides, at altitudes of 3000 to 7000 feet, flowering in April, June, and August, and fruiting in April, July to September, and December. The leaves on

Groenhart 163 are the largest I have seen in this taxon, being to 18 cm. long and 7 cm. wide. The flowers are said to have been "lavender" on Chand 5799, "old-rose" on Chand 1611, and "rose-purple" on Koelz 23422. Yates 1563 is described as a topotype.

Material of C. brevipetiolata has been misidentified and distributed in herbaria under the names C. cana L., C. cuspidata Roxb., C. lanata Vahl, "C. pedunculata var.", C. rubella Lindl., and [by Koorders] "Callicarpa sp. nov." Bartlett 7747 in the United States National Herbarium bears a label with the name Luffa cylindrica M. Roem., but this is probably a case of transposed labels. The vernacular name, "mata poena", on this label may, therefore, not actually apply to our plant. This name, however, is also recorded for C. brevipes (Benth.) Hance.

On the other hand, the Boeea 8017, distributed as C. eriophyla, is actually C. brevipes (Benth.) Hance.

In all, 57 herbarium specimens, including type material, have been examined by me.

Citations: PAKISTAN: East Bengal: Griffith 6036 (T). INDIA: Assam: Chand 1611 (Mi), 3202 (Mi), 5799 (Mi), 6225 (Mi); Koelz 23422 (Mi), 26055 (Mi), 32138 (Mi). Khasi States: Hooker & Thomson s.n. [Mont. Khasia] (M). West Bengal: C. B. Clarke 11852 (Bz-17560). INDONESIA: GREATER SUNDA ISLANDS: Java: Backer 11383 (Bz-17676, Bz-17677, Bz-17678, Bz-17679); Brinkman 540 (Bz-17489); Burck 407 (Bz-17674, Bz-17675); Docters van Leeuwen-Reijnvaan 1070 (Bz-17490); Groenhart 163 (Ut-22818a); Koorders 29459b [339*] (Bz-17680), 36198b [1758*] (Bz-17491), 38202b [255*] (Bz-17493), 38262b [1999*] (Bz-17492); Kuntze 5896 (N); Oosten 33 (Bz-17672); Steenis 2611 (Bz-17488); Stoutjesdijk 148 (Bz-17673). Sumatra: H. H. Bartlett 7747 (W-1682251); Bartlett & La Rue 323 (W-1053927--isotype); Beumée 805 (Bz-17545); D. Fairchild 1015 (Ca-301321); Galoengi 131 (Bz-17547); Hamel 424 (Kr); Huitama 92 (Bz-17543); Juchens 3203 (Bz-17549); Keers 78 (Bz-17541); Kerling s.n. (Bz-72893); Lörzing 4934 (Bz-17552), 5956 (Bz-17553), 6511 (Bz-17551), 8588 (Bz-17555), 9029 (Bz-17556), 9813 (Bz-17550); Meer Mohr 147 (Bz-17548); Ouweland 56 (Bz-17557); Steenis 5826 (Bz-17542); Toroes 1220 (N); R. Wind 9 [Boschproefstation BB.9826] (Bz-17546); H. S. Yates 101 (W-1261151), 1563 (Bz-17544, Ca-259330, Mi, N), 2313 (Bz-17554, Ca-308375, Mi).

CALICARPA BUCHERI Moldenke in Fedde, Repert. Spec. Nov. 40: 67-68. 1936.

Synonymy: Callicarpa bucherii Moldenke, Résumé Suppl. 14: 6, in syn. 1966.

Bibliography: Moldenke in Fedde, Repert. Spec. Nov. 39: 300

(1936) and 40: 67—68, 119, 122, 125, & 127. 1936; Moldenke, Geogr. Distrib. Avicenn. 4. 1939; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 24 & 86. 1942; Moldenke, Alph. List Cit. 1: 75. 1946; H. N. & A. L. Moldenke, Pl. Life 2: 52. 1948; Moldenke, Alph. List Cit. 2: 487 (1948) and 3: 757 & 867. 1949; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 42 & 177. 1949; E. J. Salisb., Ind. Kew. Suppl. 10: 38. 1947; Alain in León & Alain, Fl. Cuba 4: 304 & 305. 1957; Moldenke, Résumé 50 & 443. 1959; Moldenke, Résumé Suppl. 14: 6. 1966.

In all, 11 herbarium specimens, including the type of all the names involved, and 4 mounted photographs have been examined by me.

Additional citations: CUBA: Oriente: J. B. Acuña Galé 17877 (Es); Acuña Galé & Diaz Barreto 17440 (Es, N); Alain & López 4212 (Z); G. C. Bucher 94 [Herb. Roig 4965] (Ha--isotype); Clemente 6602 (N), 7269 (N).

CALICARPA CANDICANS (Burm. f.) Hochr., Candollea 5: 190. 1934.

Additional & emended synonymy: Mamanira Rumph., Herb. Amboin. 4: 123, pl. 58. 1743. Urtica candicans Burm. f., Fl. Ind. 197 [sphalm. "297"]. 1768. Callicarpa cana L., Mant. Pl. Alt. 198. 1771 [not C. cana Dalz. & Gibbs., 1919, nor Gamble, 1881, nor Wall., 1863]. Callicarpa tomentosa Lam., Encycl. Méth. 1: 562—563. 1783 [not C. tomentosa Bakh., 1932, nor Hook. & Arn., 1918, nor König, 1893, nor L., 1959, nor (L.) Murr., 1774, nor Murr., 1774, nor Thunb., 1959, nor Vahl, 1794, nor Willd., 1808]. Callicarpa americana Lour. apud Vahl, Symb. Bot. 3: 12. 1794 [not C. americana Blanco, 1884, nor Hort., 1936, nor L., 1753, nor Lam., 1966, nor Roxb., 1945, nor Sessé & Moc., 1893, nor Willd., 1936]. Callicarpa cana: foliis serratis subtus tomentosis L. apud Vahl, Symb. Bot. 3: 12, in syn. 1794. Callicarpa tomentosa, foliis ovato-lanceolatis acutis serratis, subtus tomentosis albis, baccis parvis nigris distinctis Lam. apud Vahl, Symb. Bot. 3: 12, in syn. 1794. Callicarpa macrocarpa Raeusch., Nom. Bot., ed. 3, 37. 1797. Callicarpa foliis ovatis denticulatis per petiolum semidecurrentibus, subtus villoso-canis, paniculis dichotomis Vahl apud Willd., Linn. Sp. Pl. 1: 620, in syn. 1797. Callicarpa (cana) foliis serratis subtus tomentosis L. apud Willd., Linn. Sp. Pl. 1: 620, in syn. 1797. Callicarpa (tomentosa) foliis ovato-lanceolatis serratis subtus tomentoso-albis, baccis parvis nigris distinctis Lam. apud Willd., Linn. Sp. Pl. 1: 620, in syn. 1797. Callicarpa adenantha R. Br., Prodr. Fl. Nov. Holl. 1: 513. 1810. Callicarpa heynii Roth ex Roem. & Schult., Linn. Syst. Veg. 3: 96. 1818. Callicarpa cana; foliis ovatis denticulatis per petiolum semidecurrentibus, subtus villoso-canis, paniculis dichotomis Vahl apud Roem. & Schult., Linn. Syst. Veg. 3: 94, in syn. 1818. Callicarpa cana; foliis serratis subtus tomentosis L. apud Sims in

Curtis, Bot. Mag. 47: pl. 2107, in syn. 1819. Callicarpa sinensis Nois. ex Steud., Nom. Bot., ed. 1, 1: 137. 1821. Callicarpa tomentosa L. ex Spreng. in L., Syst. Veg., ed. 16, 1: 419, in syn. 1825. Callicarpa dentata Roxb. ex Wall., Numer. List 87, no. 1834. 1831 [not C. dentata Roth, 1818, nor Sessé & Moc., 1940, nor Wall., 1893]. Callicarpa rheedii Kostel., Allgem. Med.-pharm. Fl. 3: 829. 1834. Callicarpa sinensis Hort. ex Steud., Nom. Bot., ed. 2, 257. 1840. Callicarpa latifolia Zipp. ex Span., Linnaea 15: 330, in syn. 1841. Callicarpus cana L. apud Hassk., Cat. Pl. Hort. Bot. Bogor. Alt. 136. 1844. Callicarpa cana Vahl ex Pritz., Icon. Bot. Ind. 2: 55. 1866. Callicarpa bicolor Schau. apud Vidal y Soler, Rev. Pl. Vasc. Filip. 208, in syn. 1886 [not C. bicolor A. L. Juss., 1806, nor F. Vill., 1880]. Callicarpa cana var. dentata (Roxb.) H. J. Lam, Verbenac. Malay. Arch. 71. 1919. Callicarpa cana var. integrifolia H. J. Lam, Verbenac. Malay. Arch. 74. 1919. Callicarpa cana var. integrifolia f. typica H. J. Lam, Verbenac. Malay. Arch. 74. 1919. Callicarpa cana var. latifolia H. J. Lam, Verbenac. Malay. Arch. 71. 1919. Callicarpa cana var. latifolia f. pentandra H. J. Lam, Verbenac. Malay. Arch. 73. 1919. Callicarpa cana var. latifolia f. typica H. J. Lam, Verbenac. Malay. Arch. 71. 1919. Callicarpa cana var. longifolia H. J. Lam, Verbenac. Malay. Arch. 72. 1919. Callicarpa cana var. typica H. J. Lam, Verbenac. Malay. Arch. 70. 1919. Callicarpa runcinata Zipp. ex H. J. Lam, Verbenac. Malay. Arch. 73, in syn. 1919. Callicarpa candidans var. typica (Bakh.) Hochr., Candollea 5: 190. 1934. Callicarpa canescens (Burm. f.) Hochr. ex Moldenke, Alph. List Cit. 2: 358 & 359, sphalm. 1948. Callicarpa candidans (Burm. f.) Hochr. ex Van Steenis, Act. Hort. Berg. 15 (2): 42, sphalm. 1949. Callicarpa haynii Roth ex Moldenke, Résumé 243, in syn. 1959. Callicarpa cana Spreng. ex Moldenke, Résumé Suppl. 14: 6, in syn. 1966.

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1821; Steud., Nom. Bot., ed. 1, 1: 137. 1821; Link, Enum. Pl. Berol. Alt. 1: 124. 1821; Spreng. in L., Syst. Veg., ed. 16, 1: 419 & 420. 1825; Blume, Bijdr. Fl. Nederl. Ind. 817. 1826; J. A. & J. H. Schult., Mant. 3: 52, 53, & 55. 1827; Spreng. in L., Syst. Veg., ed. 16, 5: 126. 1828; Wall., Numer. List 50 (1829) & 87, no. 1834. 1831; Roxb., Fl. Ind., ed. 2 [Carey], 1: 392. 1832; Kostel., Allgem. Mediz.-pharm. Fl. 3: 828—829. 1834; Decne., Nouv. Ann. Mus. Hist. Nat. Paris 3: 401. 1835; Hook., Comp. Bot. Mag. 1: 349. 1836; Hook. & Arn., Bot. Beech. Voy. 205. 1836; Grah., Cat. Pl. Bombay 156. 1839; D. Dietr., Syn. Pl. 1: 428 & 429. 1839; Dillwyn, Rev. Ref. Hort. Malab. 19. 1839; Peterm., Cod. Bot. Linn. Ind. Alph. 33. 1840; Steud., Nom. Bot., ed. 2, 257. 1840; Span., Linnaea 15: 330. 1841; Pers., Sp. Pl. 1: 342. 1842; Hassk., Cat. Pl. Hort. Bot. Bogor. Alt. 136. 1844; Walp., Repert. 4: 127—129. 1845; Jacques & Hérinseq, Man. Gén. Pl. Arb. & Arbust. [Fl. Jard. Europ.] 3: 502. 1845—1862; Schau. in A. DC., Prodr. 11: 642—643 & 645. 1847; Royle, Fib. Pl. India 310—311. 1855; Miq., Fl. Ind. Bat. 2: 885—886, 888, & 889. 1856; Miq., Fl. Ind. Bat. Suppl. 1: 243 & 569. 1860; Dalz. & Gibbs., Bomb. Fl. 200. 1861; Rosenthal, Syn. Pl. Diaph. 430 & 1130. 1862; Bocq., Rev. Verbenac. 129 & 137, pl. 8. 1863; Bocq., Adansonia 2: 129 & 137 (1862) and 3: 192 & 263, pl. 8, fig. 12—22. 1863; Bocq., Rev. Verbenac. 129, 137, 192, & 263, pl. 8, fig. 12—22. 1863; Decne., Nouv. Ann. Mus. Hist. Nat. Paris 3: 401. 1865; Hassk., Neu Schlüs. Rumph. Herb. Amboin. 84. 1866; Pritz., Icon. Bot. Ind. 1: 188 (1866) and 2: 55. 1866; Hassk., Hort. Mal. Rheed. Clavis 38. 1867; Benth. & Muell., Fl. Austral. 5: 56—57. 1870; Roxb., Fl. Ind., ed. 3 [C. B. Clarke], 131. 1874; Blanco, Fl. Filip. Atlas pl. 427 bis. 1878—1880; Gamble, Man. Ind. Timb. 283. 1881; F. Muell., First Census 103. 1882; F. M. Bailey, Syn. Queensl. Pl. 377. 1883; Vidal, Sin. Fam. Gen. Pl. Leff. Filip. pl. 34, fig. C. 1883; Rolfe, Journ. Linn. Soc. Lond. Bot. 21: 315. 1884; E. Balf., Cyclop. Ind., ed. 3, 1: 550. 1885; W. B. Hemsl., Rep. Scient. Res. Voy. Challenger Bot. 1 (1): 110 & 176. 1885; C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 568. 1885; Vidal y Soler, Rev. Pl. Vasc. Filip. 208. 1886; H. O. Forbes, Wand. Naturforsch. Malay. Arch. 2: 226. 1886; Maxim., Mél. Biol. 12: 505. 1886; Watt, Dict. Econom. Prod. Ind. 2: 26. 1889; F. Muell., Sec. Census 173. 1889; F. M. Bailey, Cat. Pl. Queensl. 35. 1890; Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. [Ind. Fl. Sin. 2:] 26: 252. 1890; G. W. Johnson, Gard. Dict. 157. 1890; Warb. in Engl., Bot. Jahrb. 13: 426. 1891; Jacks. in Hook. f. & Jacks., Ind. Kew. 1: 386. 1893; Bois, Dict. Hort. 232. 1893—1899; Nairne, Flower. Pl. West. Ind. 247. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 166. 1895; Koord., Meded. Lands Plant-tuin Buitenz. 19: 558. 1898; K. Schum., Notizbl. Bot. Gart. Berlin 2: 144. 1898; K. Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee 522. 1900; G. Nichols., 1900 Suppl. Dict. Gard. 185. 1900; Koord. & Valet., Bijdr. 7: 175 & 177. 1900; F. M. Bailey, Queensl. Fl. 4: 1174. 1901; W. P. Wright in Cassell, Dict. Pract. Gard., ed. 1, 1: 156. 1902; E. D. Merr., Philip. Bur. Forest. Bull. 1: 51. 1903; C. B. Clarke in Schmidt, Bot. Tidsskr. 26: 171—172. 1904; Cooke, Fl. Presid. Bombay 423. 1905; Prain, Rec. Bot. Surv.

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581, 584, 634, 643, & 644 (1948), 3: 658, 700, 765, 810, 852, 877, 878, 932, & 957 (1949), and 4: 987, 1100, 1102, 1103, 1148, 1155, 1206, 1208, & 1226. 1949; Moldenke, Phytologia 3: 138—140. 1949; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 124, 125, 130, 135, 138—140, 142—148, 150, 152, 156, & 177. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 3. 1950; Moldenke, Phytologia 3: 294 & 296 (1950), 4: 83 & 121—125 (1952), and 6: 215. 1958; F. R. Fosberg, Pacific Sci. 12: 20. 1958; Moldenke, Résumé 158, 160, 168, 174, 175, 177, 179, 182, 185—187, 189, 191—196, 200, 203, 208, 213, 241—247, 319, 355, & 443. 1959; Anon., Kew Bull. Gen. Index 1929—1956, 59. 1959; Moldenke, Résumé Suppl. 3: 19, 20, & 22 (1962) and 6: 8. 1963; Moldenke, Dansk Bot. Arkiv 23: 87. 1963; Backer & Bakh., Fl. Java 2: 601. 1965; Moldenke, Résumé Suppl. 13: 6 (1966) and 14: 3, 4, 6, & 7. 1966; Moldenke, Phytologia 13: 426, 439, 475, 478, 499, & 502. 1966.

Illustrations: Rheede & Munnicks, Hort. Ind. Malab. 4: pl. 60. 1683; Rumph., Herb. Amboin. 4: pl. 58. 1743; Schrank, Pl. Rar. Hort. Acad. Monac. 1: pl. 37. 1819; Bocq., Adansonia 3: [Rev. Verbenac.] pl. 8, fig. 12—22. 1863; Vidal, Sin. Fam. Gen. Pl. Leñ. Filip. pl. 34, fig. C. 1883; Domin, Bibl. Bot. 22 (89): 1109, text fig. 179. 1928.

The Schrank (1819) illustration referred to above is said by Stapf (1929) to be in color, but the copy in the library of the New York Botanical Garden is uncolored. King & Gamble (1908) note that "Clarke in Fl. Br. Ind. does not quote Bot. Mag. 2107, which Bentham had said probably represented a much more woolly plant, though it might be a var. of cana. With this we agree."

It should be noted here that the C. americana of Blanco, referred to in the synonymy above, is a synonym of C. formosana Rolfe, that accredited to "Hort." is C. longifolia Lam., that of Linnaeus is a valid species, while that of Lamarck, of Roxburgh, and of Willdenow are C. americana L., and that of Sessé & Mociño is C. pringlei Briq. The C. bicolor of A. L. Jussieu is a valid species, while that of Fernandez Villar is C. formosana Rolfe. The C. cana of Dalzell & Gibson is C. tomentosa (L.) Murr., that of Gamble is C. macrophylla Vahl, and that of Wallich is in part C. longifolia Lam. and in part C. pedunculata R. Br. The C. dentata of Roth is C. pedunculata R. Br., that of Sessé & Mociño is Cormutia grandifolia (Schlecht. & Cham.) Schau., and that of Wallich is C. longifolia Lam. The C. tomentosa of Bakhuizen van den Brink is in part C. arborea Roxb. and in part C. integerrima Champ., that of Hooker & Arnott and that of Willdenow are C. loureiri Hook. & Arn., that of König is C. macrophylla Vahl, that accredited to Linnaeus is C. erioclona Schau., that of Murray is C. tomentosa (L.) Murr., a valid species, that of Thunberg is C. longifolia Lam., and that of Vahl is something whose identity has not yet been established.

In my 1936 work I mistakenly included C. bicolor A. L. Juss., C.

cana var. glabriuscula H. J. Lam, C. cana var. integrifolia f. glabriuscula H. J. Lam, C. cana var. sumatrana (Miq.) H. J. Lam, C. chinensis Hort., and C. sumatrana Miq. in the synonymy of this taxon, for which I then accepted the name C. cana L. I now regard C. bicolor as a valid species; C. cana var. integrifolia f. glabriuscula is C. elegans Hayek, and the others are C. candicans var. sumatrana (Miq.) Moldenke. Lam (1914, 1919) also included C. bicolor A. L. Juss. in the synonymy of C. cana, while King & Gamble (1908) and Domin (1928) included both C. bicolor and C. sumatrana.

The C. acuminata Roxb., given as a synonym of C. cana by Steudel (1840), is actually C. nudiflora Hook. & Arn.; the Anonymus baccifera, verticillata, folio molli, & incano Pluk. and its variant orthography, Anonymus baccifera, verticillata, folio molli et incano Pluk., given as synonyms by Loureiro (1790, 1793) belong in the synonymy of the true C. americana L.; the C. wallichiana Walp., given as a synonym by Dalzell & Gibson (1860), is C. tomentosa (L.) Murr.

Curiously, Crevost & Pételot (1934) seem to maintain C. americana Lour., C. cana L., and C. rheedii Kostel. all as valid species, with only C. tomentosa Lam. as a synonym of C. cana.

It is worth noting here that the original publication of C. cana L. is often cited as "L., Mant. 2: 198" or "L., Mant., ed. 2, 2: 198". Merrill (1903) and Lam (1919) date it "1767" in error. Lam also dates the original publication of C. adenantha erroneously as "1827", that of C. dentata as "1828", that of C. rheedii as "1836", and that of C. sinensis as "1841". The original publication of C. heynii is sometimes given as "Roth, Nov. Pl. Spec. 82. 1821", apparently in error. The "Journ. Roy. Asiatic Soc. Bengal 74 (3): 1012 & 1018 (1909)" reference sometimes cited is an error for King & Gamble, Mat. Fl. Malay. Penins. 21: 1016—1017 (1909).

It is perhaps also worth mentioning here that the Kosteletsky (1834) reference given in the bibliography above is sometimes inaccurately dated in bibliographies as "1835" -- actually, it was pages 1119 onwards in this work that were published in 1835. The Hassk., Cat. Pl. Hort. Bot. Bogor. Alt. 136 (1844) reference is sometimes cited as "Hassk., Cat. Lands Pl. Tuin Buitenz. 2: 136", an alternative title. "Roxb., Fl. Ind., ed. 1 [Carey & Wall.], 1: 392 (1820)" is sometimes given as a reference to C. candicans, but apparently in error since this taxon is not mentioned on that page.

The type of C. candicans was collected in Java and its leaves are described as "ovate-lanceolate". Linnaeus' original (1771) description of C. cana should be reproduced here because of its nomenclatural importance: "CALLICARPA foliis serratis subtus tomentosis. Habitat in Java. Frutex ramis compressiusculis, albido-tomentosis. Folia opposita, petiolata, ovato-lanceolata, serrata, spithamea, supra nervis subtus tota tomentosa. Panicu-

iae axillares, dichotomae, vix foliorum longitudine, tomentosae: Bracteis minutis, subulatis, ad singulam dichotomiam oppositis. Calyx cylindricus, vix quadridentatus, laevior. Corola infundibuliformis, quadrifida. Filamenta capillaria, corolla duplo longiora. Germen superum. Stylus statura filamentorum. Stigma capitatum, obtusum."

Vahl (1794) says: "In editione Syst. Veget. MURRAYI omittitur haec species, tam a Callicarpa lanata, quam a reliquis speciebus hujus generis satis distincta. A Callicarpa lanata differt ramis, foliis subtus paniculisque e villis copiosis incanis minime vero lana densa vestitis: foliis ad dimidium petioli decurrentibus non autem basi ovatis, junioribus supra tantum subrugosis non vero adultioribus, ut in illa: supra glaberrimis nec nervis incanis: nervis et venis subtus elevatis conspicuis, nec e tomento coopertis, denique denticulis marginis majoribus in omnibus foliis, nec ut in Callicarpa lanata, in aliis foliis nullis in aliis obsoletis. Facie ad Callic. americanam propior accedit, tomentum vero ramorum & foliorum in Call. am. fere pulverulentum, folia minora serrata, serraturis profundioribus, obtusiusculis, nec acute denticulata, paniculae parvae minus ramosae, ramis non divaricatis, flores maiores, calyces glabriores, capsulae maiores oblongae, convenienter coeterum figura foliorum." His reference to the fruit as a capsule is amazing.

Roxburgh's account (1820) of C. cana is of great interest: "Shrubby, downy. Leaves ovate, glandular-dentate-serrate, downy underneath. Panicles axillary, sub-globular. Stigma bifid. Berries purple....This shrub was introduced into the Botanic Garden from the Moluccas in 1798, and in three years had attained to the height of from four to eight feet, considerably ramous, with the young parts downy and the ligneous ones covered with a smooth ash coloured bark. They are in blossom in March and April chiefly, though more or less the whole year. Leaves opposite, short-petioled, from broad cordate to oblong, reticulated with margins glandular-dentate-serrate, upper side soft and of a deep green colour, but very downy, and pale underneath. — Cymes axillary, dichotomous, scarcely longer than the petioles, villous. — Flowers numerous, small, pale red colour. — Bractes subulate, caducous. — Filaments longer than the corols, and inserted into the base of its tube, ascending. — Style declined, length of the filaments. Stigma two-cleft. — Berry small, round, smooth, deep purple; seeds four.....It differs from C. americana, Willd. in having a woolly toothed calyx, two-lobed stigma and in the form of the leaves."

Link (1821) comments under C. cana L.: "Non distincta est C. tomentosa W. E. 158". Actually, however, C. tomentosa Willd. is a synonym of C. loureiri Hook. & Arn., a very different plant.

Sprengel (1825) includes a "Callicarpa tomentosa L." as a synonym, but doubtless intended this for "C. tomentosa Lam." He regards C. adenantha R. Br. and C. heynii Roth as distinct,

giving C. acuminata Roxb. as a synonym of the latter! However, I regard C. acuminata Roxb. as a synonym of C. mudiflora Hook. & Arn., a very different plant.

Kosteletsky (1834) notes "Auf Bergen in Ostindien -- Blätter dort fast stets.....vorzüglich in März und April....Die Blätter werden für ein altericendes, besonders bei Hautkrankheiten sehr wirksames Mittel gehalten und auch zur Beförderung der Harn-Absonderung gebraucht." Other records of economic uses are known. Rosenthal (1862) says "Die Blätter werden vorzugsweise bei Flechten für wirksam gehalten.....Wurzel und Rinde dienen gegen Fieber, Leberleiden, Flechten, Krätze u.s.w." Heyne (1917) says "Struik met geneeskachtige bladern (De Clercq No. 573). Volgens Filet... appliceert men de bladern op wonden om zwelling te voorkomen; te Batavia gebruikt man ze tegen steenpuisten." Lam (1924) reports that "die zerrissenen Blätter werden zum Betäuben von Fischen angewendet."

Dillwyn (1839) says "60. Callicarpa cana of Lin. Mant. I have the authority of my friend Robert Brown for the above reference, and the figure answers to a specimen at the Linnean Society, which has been so named by Dr. Wallich. It is quoted with a query by Dennstedt for the Callicarpa macrophylla of Vahl." He is referring here to plate 60 in Rheede's Hort. Ind. Malab. (1683). The reference here to the Linnean Herbarium is of interest because Jackson (1912) states that there are no specimens in that herbarium named C. cana. Actually, I have examined the material in the Linnean Herbarium personally. Under genus 136, Callicarpa, specimen number 2 was originally identified as C. tomentosa, then later as "cana ?" by Smith (according to B. D. Jackson), but it is actually C. mudiflora Hook. & Arn. However, specimen number 3, completely unnamed, with the single notation "Ind. or." is the true C. cana L. Perhaps it is to this specimen that Dillwyn refers as having been identified as C. cana by Wallich; if so, Wallich made no notation of his identification on the sheet. Perhaps the rule (also enforced when I examined the material) that no annotations be placed on any of the sheets was in force already then.

Bentham & Mueller (1870) say "The species extends over the Indian Archipelago to the Malayan peninsula and the Philippine Islands. The Timor and Javanese specimens, correctly referred here by the author Schauer, differ slightly from the Australian ones in their larger more acuminate leaves. The figure in Bot. Mag. t. 2107, represents a much more woolly plant but is perhaps a variety only. C. bicolor Juss., Schau., in DC. Prodr. xi. 642, and C. erioclona Schau. l. c. 643 appear to me both to be precisely the common Archipelago form of C. cana. The C. adenantha referred by Schauer with doubt to C. longifolia Lam. appears to me to be the true C. cana."

Gamble (1881) says "Common in forests and along roadsides in the Terai and Dúars, extending probably southwards to the Ganges. It has pretty pink flowers." It is, however, probable that he is

here referring to C. macrophylla Vahl, rather than to C. candicans. This applies also to his description of the bark and wood.

Balfour (1885) curiously regards C. cana L., C. tomentosa L., and C. americana Lour. as synonyms of what he calls C. lanata L. [now known as C. tomentosa (L.) Murr.]. King & Gamble (1908) give a detailed description of what they call C. cana, but which may contain elements that apply instead to C. macrophylla, with which these authors apparently at least sometimes confused C. candicans. "A shrub, branchlets, leaves beneath, and inflorescence covered with a down of whitish, or grey or cinnamomeous stellate hairs; branchlets obtusely quadrangular. Leaves membranous; ovate, ovate-elliptic or ovate-lanceolate, shortly acuminate at apex, cuneately attenuate at base; upper surface stellate-tomentose when young, afterwards glabrous, shining and dark-coloured, glandular-punctate; lower more or less whitish-grey stellate-tomentose, sometimes rugose, but more usually softly and conspicuously hairy, glandular-punctate beneath the tomentums; margins glandular-serrate, except at the cuneate base; 4 to 7 in. long, 2 to 3 in. broad; midrib rather slender, pubescent above; main nerves 10 to 12 pairs, impressed above, slightly raised beneath, starting at an angle of 40° to 45° with the midrib and curving upwards to the margin, joined by regular transverse nearly parallel nervules; reticulations netted, impressed above; petiole .25 to .75 in. long, upper part bordered by the decurrent margins of the blade. Cymes many-flowered, rounded, scarcely longer than the petioles, dichotomous; peduncles about .25 in. long; bracts linear-subulate, very small; pedicels very short; flowers pale red. Calyx densely white-stellate-tomentose without, glabrous within, .05 in. long; teeth very minute. Corolla campanulate; tube glabrous, .075 in. long; lobes rounded, .025 in. long, slightly white-villous without. Stamens inserted close to the base of the tube; filaments much exsert, twisted, .15 in. long; anthers .02 in. long; the connective glandular-punctate, ovary somewhat depressed; style decurved, often twisted, as long as filaments; stigma funnel-shaped. Drupe globose, under .1 in. long & in diam., purple; pyrenes 4."

Merrill (1917) says "Hasskarl.....thought that [Mamanira] might possibly be Sponia amboinensis Planch. - Trema amboinensis Blume, while Teysmann.....suggested that it might be a species of Callicarpa. I consider that Teysmann is correct in his supposition, as the description is unmistakably that of a Callicarpa, while the figure is a fair representation of Callicarpa except for the very poorly drawn inflorescences. I am of the opinion that the widely distributed Callicarpa cana Linn. was the species intended, but nothing approaching this species is represented in our Amboina collections, although Rel. Robins. 2465, from Macassar, Celebes, is unquestionably referable to it. Further field work in Amboina will doubtless clear up any doubt there may exist as to the exact identity of Mamanira."

Lam (1919) says "In our opinion, C. cana is a very polymorphous species, the varieties of which show an often uninterrupted series of transitory forms between each other. Though there are certain species, the affinity of which with C. cana is evident and even close, their general habit makes them distinctly different from the present species, the varieties of which are conform in habit, the length of cymes and peduncles, and the size of the leaves." This distinguished worker divides C. cana into numerous subspecific categories and cites (1924) numerous specimens. Certain of his subspecific taxa I will discuss elsewhere, but those that I regard as belonging to typical C. candicans should perhaps have his descriptions and citations reproduced here: var. typica H. J. Lam (C. heynii Roth, C. latifolia Zipp., in part) — "folia membranacea vel subchartacea, late ovata vel ovato-rotundata usque ad sub-tetragona, basi in petiolum decurrentia, apice breviter acuminata vel interdum obtusa, adulta supra glabra, subtus dense albido-stellato-tomentosa, basi integra, ceterum serrata, nervis secundariis utrinque circiter 10; 7—14 cm. longo, 4 1/2—8 cm. lata, petiolo 0.6—2.8 cm. longo." — WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: Cuming 1283. INDONESIA: GREATER SUNDA ISLANDS: Celebes: Teijsmann & De Vriese s.n. (Le—908.267-1061, Le—908.267-1062). Java: Elbert 20467, Forbes 1252, Junghuhn 108, Korthals 580, Mousset 1055, Waitz s.n. (Le—908.266-1230), Zollinger 157. Kambangan: De Vriese s.n. (Le—908.265-1459), Junghuhn s.n. (Le—908.265-380). LESSER SUNDA ISLANDS: Lombok: Elbert 2409. Sumbawa: Elbert 3534, 3568, 3636, 3806, 3897, 3953, & 4137. MELANESIA: BISMARCK ARCHIPELAGO: New Ireland: Peekel 734.

Var. longifolia H. J. Lam — "folia subchartacea, lanceolata, utrinque acuta, adulta supra glabra, subtus dense albido-stellato-tomentosa, saepe singulis glandulis parvis, in sicco atris prope nervum primarium suffulta; nervis secundariis utrinque 8; 7—15 1/2 cm. longa, 2 1/2—5 cm. lata; petiolo 1.2—2.5 cm. longo; corolla glabra." — WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: Reillo 19265. PALAU ISLANDS: Koror: Ledermann 14126, Raymundus 189. INDONESIA: GREATER SUNDA ISLANDS: Celebes: Collector undetermined s.n. (Le—908.266-1231, Le—908.266-1232). "As in var. ♀ [sumatrana], it is distinguishable from C. longifolia by the always tomentose never floccose texture of the lower side of the leaves."

Var. latifolia H. J. Lam — "folia valde membranacea, late ovata, numquam tetragona, basi attenuata, apice longiuscule acuminate, margine ut in var. ♂ [typica], vel crenata, vel bidentata, adulta supra glabra, subtus densiuscule stellato-tomentosa, nervis secundariis utrinque 8—10, 13—19 cm. longa, 6—11 cm. lata, petiolo 2—3 cm. longo."

Var. latifolia f. typica H. J. Lam (C. latifolia Zipp., in part) — "flores tetrameri". — WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Negros: E. D. Merrill 207. PALAU ISLANDS: Yap: Vol-

kens 439. INDONESIA: GREATER SUNDA ISLANDS: Sumatra: Collector undetermined s.n. (Bz—4381). LESSER SUNDA ISLANDS: Lombok: Elbert 736 & 1992. Timor: Decaisne s.n. (Le—908.265-299), Zippel s.n. (Le—908.265-937, Le—908.265-938, Le—908.265-947). MELANESIA: BISMARCK ARCHIPELAGO: Hermit: Kramer 51.

Var. latifolia f. pentandra H. J. Lam — "flores pentameri".— LOCALITY OF COLLECTION UNDETERMINED: Collector undetermined s.n. (Le—908.265-1108, Le—908.265-1445).

Var. dentata H. J. Lam (C. runcinata Zipp.) — "folia membranacea vel subchartacea, basi attenuata, acumine longiusculo, vel apice subtruncata, adulta supra glabra, subtus laxiuscule stellato-tomentosa, margine basi integra, ceterum grosse et irregulariter serrato-dentata, nervis secundariis utrinque 7—8, 7 1/2—15 cm. longa, 3—7 cm. lata, petiolo 0.7—2 cm. longo." — INDONESIA: LESSER SUNDA ISLANDS: Sumbawa: Elbert 3505. Timor: Zippel s.n. (Le—908.266-13).

Var. integrifolia H. J. Lam — "folia membranacea vel subchartacea vel chartacea, basi apiceque attenuata, ovata vel obtusa subtetragona, margine integra, apicem versus crenulata vel subundulata vel subintegra, adulta supra glabra, opaca, subtus brunneo-luteo- vel flavidio-tomentosa vel glabriuscua; corolla pilis in vittis 4 in lobis positis vestita vel glabra."

Var. integrifolia f. typica H. J. Lam — "folia subtus dense tomentosa; corolla pilosa." — WESTERN PACIFIC ISLANDS: MARIANA ISLANDS: Saipan: Fritz s.n. (B), Volkens 14. Tinian: Schnee s.n. (B). PALAU ISLANDS: Yap: Volkens 210. MICRONESIA: CAROLINE ISLANDS: Truk: Kraemer 36. MELANESIA: BISMARCK ARCHIPELAGO: Hermit: Kraemer 10.

Var. integrifolia f. glabriuscua H. J. Lam — "folia subtus glabriuscua; corolla glabra." — WESTERN PACIFIC ISLANDS: MARIANA ISLANDS: Saipan: Fritz s.n. (B). INDONESIA: GREATER SUNDA ISLANDS: Salajar: Weber s.n. (Le—908.267-916). MICRONESIA: CAROLINE ISLANDS: Truk: Ledermann 14019.

In discussing his C. cana var. latifolia f. pentandra, Dr. Lam says "In some cases, like this, Callicarpa may be pentamerous, and in this point, form a transaction [transition] into Geunsia. The two genera may be distinguished, however, by the distribution of the leaves, which are in Callicarpa always opposite, and in Geunsia always opposite and alternate. As there are 5-merous Callicarpae, so there are also 4-merous Geunsiae. Yet there are no doubtful cases, in regard of habit and distribution of the leaves." With this statement I agree wholeheartedly!

It is a pity that Dr. Lam did not designate types for his subspecific taxa. It seems rather definite that some, at least (if not all!), of his citations under certain of these taxa represent C. erioclona Schau., C. erioclona var. paucinervia (Merr.) Moldenke, or C. erioclona f. glabrescens Moldenke. Unfortunately, I have not as yet had the opportunity to examine the specimens he cites,

and, conversely, the specimens which I cite have apparently not been seen by him. I would be not at all surprised if his C. cana var. integrifolia and var. integrifolia f. typica should prove to be C. eriocarpa or C. eriocarpa var. paucinervia, and that his C. cana var. integrifolia f. glabriuscula should prove to be C. eriocarpa f. glabrescens, necessitating a change in name for the latter. Callicarpa cana var. repanda Warb. is certainly C. eriocarpa.

Crevost & Pételet (1934) refer to a "C. americana L." from Indochina, but certainly mean C. americana Lour., which is a synonym of C. candicans. Bakhuisen van den Brink (1921) places Mamanira Rumph. in the synonymy of what he calls C. cuspidata Roxb. [= C. pedunculata R. Br.], and places C. dentata Roxb. both in the synonymy of C. cana L. [-C. candicans] and of C. longifolia Lam.

Backer & Bakhuisen van den Brink (1965) describe C. candicans as follows: "Adult leaves on the lower surface densely white-stellate-hairy, on the upper surface (often with the exception of the large nerves) glabrous, oval-elliptic-oblong-obovate, with a contracted, decurrent base, rounded, obtuse or acutely to obtusely acuminate, serrate-dentate, 5—25 cm by 2 1/2—15 cm; petiole 3/4—3 1/2 cm. Cymes on 1/2—1 cm long peduncles, densely stellate-hairy, 2—6 cm across; calyx c. 1 1/2 mm high, densely white-stellate-hairy; teeth minute, obtuse; corolla violet, 2 1/2—3 mm high, rather deeply lobed; tube glabrous; segments rounded, often with a few thick glands; stamens c. 4 mm; drupe globose, dark violet, 4-pyrenous. Erect shrub."

Recent collectors describe the plant as a small, erect, woody shrub or subshrub, 0.5—4 m. tall, sometimes only semi-woody, or a large tree; trunk 0.6—1 cm. in diameter; bark subaromatic and slightly bitter; wood white, soft, the annual rings marked by a line of closer pores; leaves light-green above, white with light-brown veins beneath; flowers ill-smelling; pedicels light greenish-brown; calyx light greenish-brown; corolla varying from white to rosy, red, purple, or "light-violet, darker within"; stamens purple or purplish; filaments light-violet; anthers light-yellow; style light-violet; stigma very light-violet; fruit green or pale-green when immature, later deep-violet, dark-purple, purple-black, or black, edible. Koorders 27608b has two of its leaves deeply retuse at the apex and all the leaves coarsely serrate. The flowers on Ts'ang 515 are described as "red", on Yates 25 as "purple", on Agama 1050 as "rosy to purple", and on Tsiang 873 and Ying 873 as "white".

Watt (1889) makes the following comments about this plant: "A shrub of Bengal; common in forests and along road-sides in the Terai and Duars, extending probably southward to the Ganges. Royle, in his Fibrous Plants of India, says that a fibre is prepared from this plant, called Arusha in Chittagong. Captain Thomson, reporting of this fibre, says: 'It is much too weak for either sailcloth or cordage. It, however, possesses all the free and

kindly nature of flax, and even smells like flax. It is easily worked, with little or no waste, &c.'"

Recent collectors have found the plant growing in grassy wilds, brushwood, light forests, scrub jungles, thickets, ravines, dry open places, steppe-like grass formations, sandy soil, and loam, near streams, at the edge of jungles, along roadsides, on dry hills, hillsides, open slopes, limestone, dry ground, and dry level land, in open places, and on the strand, at altitudes of 7 to 200 meters, flowering from April to August and October to February, fruiting from May to July, September, October, and December to February. It is, however, fairly certain that some of these statements include var. sumatrana, C. erioclona, and C. erioclona var. paucinervia. Koorders (1912) says that in Java C. candicans grows on "Ebene und Gebirge". Prain (1905) reports that it is "often planted in native gardens; sometimes as if wild in village shrubberies [in India]; native of Malaya". According to Johnson (1890) it was introduced into western cultivation in 1799, but 1798 seems to be the more correct date.

Common and vernacular names for this plant are numerous, including "adokk", "alalui", "alayo-ti-manōk", "alo-loy", "anobrang", "amuyup", "apoe-apoe", "apu-apu", "aroosha", "arusha", "caboxoud", "callicarpa blanc", "callicarpe colonneux", "cebochoud", "damar bēsi", "deloebang", "drodol", "dub", "dub rsáchel", "dub rscháchel", "dup", "dynamite-grass", "goro-goro oetan", "gorruau", "graue Schönbeere", "graue Wirbelbeere", "hai ngan", "hamlatt", "hati-hati ketan", "kajoe", "katoempang badak", "katoempang kajoe", "katumpang", "katumpang badak", "katumpang kayo", "kikatumpang badak", "kuping bēsi", "lo hai ngan", "lo hai ngan muk", "Malabar hoary callicarpa", "mamanirang", "manieran", "mēniran bēsar", "mēniran kasar", "mēniran kēbo", "mēniran oetan", "mēniran utan", "palis", "papalsis", "poeltak-poeltak", "red-fruited tampang bēsi", "resepo", "Rheede's Wirbelbeere", "roidi", "sai fa min", "sesepo", "sētampo bēsi", "songka oetan", "songka utan", "tambalási", "tambal-basi", "tampa besi", "tampa bēsi", "tampah bēsi", "tampal bēsi", "tampang bēsi", "tampang bēsi merah", "tampong bēsi puteh", "tapoeng-tapoeng", "tīgau", "tīgau-na-itím", "tiptipinagut", "toembar bēsi", and "tūbang-dalág". It is very probable, however, that some of these names apply to what we now call var. sumatrana, C. erioclona, or C. erioclona var. paucinervia, which see. The name "tampang bēsi" is applied also to Vitex vestita Wall. The fiber of C. candicans, as has been noted above, is known as "aroosha fiber" in India.

It is of great interest to note how various authors have given the distribution of C. candicans (or C. cana, as most of them called the taxon). Merrill (1903) says "Southern Asia, Malayan region, to Australia"; King & Gamble (1908) "Malay Archipelago, Philippine Islands, Australia"; Craib (1911) "Hainan, Malaya, Philippines, Indies"; Lam (1914) "Calcutta, Malakka, P. Pinang, Sumatra, Banka, Java, Timor, Saleyer-Ins., Minahassah, Luzon, Negros, Hermit-Ins., Palau-Ins., Neu-Mecklenberg, Yap und Truk

Ins., Karolinen, Saipan und Tinian (Marianen), N. Australien" [this obviously includes C. erioclona and C. erioclona var. paucinervia!]; Lam (1919) "Calcutta, Malacca!, Malaya (Sumatra!, Banka!, Java!, Timor!, Saleyer-Isl.!; Minahassa!), Philippines (Luzon! Negros!), Bismarck-arch. (New-Ireland, Hermit-isl.!), Palau-isl.!, Marianne-isl.!, Caroline-isl.!, Bourbon (Hallier)" [again, obviously including C. erioclona and C. erioclona var. paucinervia]; Bakhuizen van den Brink (1921) "Malabar, Silhet, Chittagong, Calcutta, Malacca, Cochin-china, China, Philippines, Malay Archipelago, New Guinea, Polynesia, Australia, & Bourbon (? cult.)"; Ridley (1923) "open country, edges of woods and clearings", Pahang, Malacca, Negri Sembilan, Perak, Wellesley, Penang, & Perlis, "Malay islands to Australia"; Lam (1924) "Calcutta, Malakka, Malayischer Archipel, Philippinen, Bismarck-Archipel, Palau Inseln, Marianen, Karolinen, Bourbon"; Domin (1928) "von Malakka über Malaya nach den Philippinen und Australien (Nord-Australien, Nord-Queensland)" [he cites two of his unnumbered collections of Febraury 1910 from Queensland and notes of them "forma vel varietas foliis minoribus, circa 4--6 cm. longis et 3—3.5 cm. latis excellens"]; L. H. & E. Z. Bailey (1930) "Malaya"; P'ei (1932) "India to Indo-China through Malaysia to tropical Australia, New Guinea, and western Polynesia"; Lam & Meeuse (1945) "Mascarenes to Polynesia". These two last-mentioned authors record the species from Miangas Island, but of this affinity I know only C. erioclona from there. It seems very probable that most, if not all, of the above "records" from Micronesia, Melanesia, and Polynesia apply to C. erioclona and/or its subspecific taxa.

It is also probably worth noting here that C. cana has been recorded from Bourbon by Bois (1893—1899), from Penang by Nicholson (1900), from Thailand by Williams (1905), from "E. India, China, Philippine Isl." by Bailey & Miller (1906), from "Hainan, Malaya, Philippines, Indies" by Craib (1912), from Kwangtung, China, by Chung (1924), from Western Australia by Gardner (1931), and from Pasan Island by Fosberg (1958). St. John (1948) records it from Angaur Island and (1946) from Tinian Island, but these are doubtless both misidentifications of C. erioclona.

Schauer (1847) cites: MASCARENE ISLANDS: Réunion: Perrottet s.n. [Bourbon]. INDIA: West Bengal: Wallich s.n. [Calcutta, anno 1819] (Dc). MALAYA: Malacca: Delessert s.n., Griffith s.n. Penang: Wallich 1834. INDONESIA: GREATER SUNDA ISLANDS: Java: Zollinger 35 & 157. He notes that he examined cultivated material and dried specimens "in h. DC. etc."

Miquel (1856) cites a Perrottet collection from Java and one of Horsfield from "G. Prace". He comments that "Deze en andere soorten worden, wegens hare bittere aromatische hoedanigheid, als geneesmiddel gebruikt".

Bentham & Mueller (1870) cite F. Mueller s.n. [Victoria river] from Northern Territory, Australia, R. Brown s.n. from Groote Island, and Bowman s.n., Daintree s.n. [Gilbert river], and Dallachy s.n. [Edgecombe Bay and Port Dennison] from Queensland.

King & Gamble (1908) cite: MALAYA: Malacca: Griffith s.n., Maingay 1190, H. N. Ridley 1589. Negri Sembilan: H. N. Ridley 9574. Penang: Phillips s.n., Porter s.n., Wallich 1834. Singapore: Kurz 2908.

Lam (1914) cites Elbert 3505 from Sumbawa. P'ei (1932) cites: CHINA: Kwangtung: Ying [Tsiang] 873. CHINESE COASTAL ISLANDS: Hainan: Chun 240 & 1554, Ford s.n., Henry s.n., Tak [Tsiang] 83 & 515. The last-mentioned is probably an error for "315". All of these collections except Ying 873 and Chun 240 are cited by me as C. candicans var. sumatrana, which see.

Dop (1932) cites the following material: INDOCHINA: Annam: Bauche s.n.; Chevalier 30580, 32300, & 32617; Clemens 4140; Eberhardt s.n.; Hayata s.n.; Lecomte & Finet 1120; Pierre s.n.; Poilane 6703 & 8148; C. B. Robinson 1273; Squires s.n. Cambodia: Béjaud 447; Couderc s.n.; Godefroy s.n. Cochinchina: Baudouin s.n.; Evrard 422; Godefroy s.n.; Lefevre 8; Pierre 5225; Talmy 282; Thorel 719. Laos: H. d'Orleans s.n.; Lecomte & Finet 1210, 1219, 1225, 1235, 1641, & 1787; Spire 1061. Tonkin: Balansa 931 & 932; Bois 255; Bon 478, 2192, & 2628; Brousmiche 333; Chevalier 32180; Colani 3899; Demange 1173; Duport 47; Eberhardt 3163, 3237, 3327, 3915, 4576, & 4811; Lecomte & Finet 15; Mouret 248. THAILAND: Kerr 1226.

Material has been misidentified and distributed in herbaria under the names C. bicolor A. L. Juss., C. dentata Roth, C. lana-ta Vahl, and C. reevesii Wall. On the other hand, the Ramos & Edafio s.n. [Herb. Philip. Bur. Sci. 48132 & 49172], distributed as C. candicans, are actually C. bicolor A. L. Juss.; Groenhart 163 is C. brevipetiolata Merr.; Bois 255, Burkill 12418, W. Y. Chun 1554 [Herb. Univ. Nanking 6751], Clemens & Clemens 4140, Eberhardt 3327, C. Ford s.n., M. R. Henderson 18202, Henry s.n., Lau 139, 1026, 2801, & 3379, Lei 155 & 731, Lete 193, Liang 61557, 61931, 64567, 65228, & 66541, Pierre 5225, C. B. Robinson 1273, Squires 188 & 791, Tak 83 [Herb. Lingnan Univ. 15582] & 315 [Herb. Lingnan Univ. 17064], Thorel 719, Tsang 83 & 315, Tsiang 10342, Wang 33351, and Ward 8911 are all C. candicans var. sumatrana (Miq.) Moldenke; Koorders 19498b [448] is C. caudata Maxim.; Béjaud 447, R. E. Burton 129, Commerson s.n. [Port Praslin], E-dafio s.n. [Herb. Philip. Bur. Sci. 41685 & 46162], Espinosa s.n. [Herb. Philip. Forest. Bur. 30146], R. B. Fox 106, Guerrero 7 [Herb. Philip. Forest. Bur. 30367], Herre 17, Hosokawa 5838, Kane-hira 79, Kariyone 31, Lam 3372, Philip. Nat. Herb. 13401, Quezon 1 [Herb. Philip. Forest. Bur. 30258], I. Ramirez s.n. [Herb. Philip. Forest. Bur. 29915], Ramos & Pascasio s.n. [Herb. Philip. Bur. Sci. 34697], C. B. Robinson 2465, Q. Ruiz s.n. [Herb. Philip.

Forest. Bur. 30005], H. St. John 21502, Takamatsu 796 & 1824 (in part), Wenzel 1328 & 3389, Zollinger 35.7062, and Zwickey 14 are all C. erioclona Schau.; Abbott & Bates 45, Hosokawa 8398, and Takamatsu 323 are C. erioclona f. glabrescens Moldenke; Cowan s.n. [April 3, 1945], Hosokawa 6190, 8348, & 8857, Kanehira 1006, 1242, & 1301, Kondo VI, s.n. [June 7, 1952], & s.n. [June 25, 1952], Lessa 24, R. Moran 4525, H. M. Mayo s.n. [Oct. 24, 1947], Takamatsu 1229, 1355, & 1824 (in part), and Wong 135 & 326 are all C. erioclona var. paucinervia (Merr.) Moldenke; and F. L. Stevens 1429 is Buddleia asiatica Lour. in the Loganiaceae.

In all, 250 herbarium specimens and 5 mounted photographs have been examined by me. It should, however, be pointed out that in the 30 years that have passed since I first published on this genus in monographic form as my Master's thesis, my concepts about the delimitations of this species have changed considerably. I cannot very easily now borrow back the many specimens which I annotated in scores of herbaria during these years. It may therefore be that some of the specimens cited below as C. candicans and with early dates on my printed annotation labels may now fall better into var. sumatrana, C. erioclona, C. erioclona f. glabrescens, or C. erioclona var. paucinervia.

Additional citations: MASCARENE ISLANDS: Réunion: Barthe s.n. [1857] (P). INDIA: West Bengal: Meebold 3827 (S). State undetermined: Rottler s.n. (K); Roxburgh s.n. [Ind. orient.] (K); Shepperd s.n. (K); T. Thomson s.n. [Plan. Ganget. inf.] (S); Wallich 41a (S). CHINA: Kwangtung: Ying 873 (Ca-359003). CHINESE COASTAL ISLANDS: Hainan: A. Henry 28393 (N); How 71326 (Bz-17469); C. Wang 33351 (N). THAILAND: F. K. Ward 37458 (Bz-17464). INDOCHINA: Annam: Poilane 6703 (B). Cochinchina: Evrard 422 (Bz-72836). Laos: F. K. Ward 8911 (N). Tonkin: Eberhardt 3163 (B). WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Luzon: Fenix 9909 (Kr); F. C. Gates s.n. [Aug. 10, 1913] (Ka-66777); Holman s.n. [June 17, 1910] (Du-66988), s.n. [May 10th, 1911] (Du-67089). Mindanao: F. Guerrero 30367 (B); Quezon s.n. [Herb. Philip. Forest. Bur. 30258] (S). Island undetermined: Collector undetermined s.n. (I-photo); Née 22 (Q), 23 (Q), 26 (Q), 31 (Q). INDONESIA: GREATER SUNDA ISLANDS: Bawean: Buwalda 3051 (Bz-73011); Dorplo 80 (Bz-17427). Borneo: Boschwezen 1922 (Bz-17298); Gandrup 29 (Bz-17297). British North Borneo: Agama 1050 [352] (Ph); Yates 25 [66] (Ph). Celebes: Kjellberg 14 (S), 96 (S, S), 1275 (S); Lam 3372 (N); Pesik 12 (Bz-17463). Java: Adm. Ondern. Gamampir 28 (Bz-17300); Backer 1154 (Bz-17342), 2742 (Bz-17320), 4506 (Bz-17340, Bz-17341), 5618 (Bz-17316), 5815 (Bz-17343, Bz-17344), 6598 (Bz-17317), 7942 (Bz-17346, Bz-17347), 17982 (Bz-17349, Bz-17350), 18054 (Bz-17322), 18180 (Bz-17348), 18816 (Bz-17318, Bz-17319), 24269 (Bz-17351),

26519 (Bz--17359), 26591 (Bz--17406), 34137 (Bz--17356, Bz--17357),
34138 (Bz--17354, Bz--17355), 34139 (Bz--17353, Bz--17358), s.n.
 [Bandja] (Bz--17345); Bakhuisen 2062 (Bz--17308, Ut--24881a),
5618 (Bz--17313, Ca--236615), 5728 (Bz--17326, Ca--234995), 6517
 (Bz--17312); Beumée 209 (Bz--17387), 473 (Bz--17392), 644 (Bz--
 17388), 729 (Bz--17389), 770 (Bz--17390), 1222 (Bz--17384), 1225
 (Bz--17396, Bz--17397), 1250 (Bz--17394, Bz--17395), 1264 (Bz--
 17383), 1285 (Bz--17398, Bz--17399), 1355 (Bz--17382), 1845 (Bz--
 17391), 2783 (Bz--17407), 3436 (Bz--17333), 3625 (Bz--17393),
3667 (Bz--17339), 3779 (Bz--17302), 3822 (Bz--17301), 4736 (Bz--
 17361), 4764 (Bz--17360), 4806 (Bz--17303), A.302 (Bz--17307);
Birkhoff II (Bz--17404); Blokhuis s.n. [Mei 1919] (Bz--17334, Bz--
 17335); Boer 3515 (Bz--17369); Brinkman 10 (Bz--17321); Broekhuijsen
15 (Bz--17305); Burck & Monchey s.n. [Buitenzorg] (Bz--17328,
 Ca--265964); Burger 5620 (Bz--17327); Büsgen 97 (B, Bz--17381);
Buwalda 7212 (Bz--72897), 7555 (Bz--72895), 7562 (Bz--72896);
Clason C.87 (Bz--17309), D.10 (Bz--17310); Clason-Laarman 966 (Bz--
 17314); Cordes 16 (Bz--17402); Den Hop 35 (Bz--17386); Docters
van Leeuwen-Reijnvaan 773 (Bz--17363, Bz--17400), 11642 (Bz--
 17368), s.n. [14 Juni 1909] (Bz--17338); Edeling s.n. [Bidara
 Tjira] (Bz--17373, Bz--17374); Elbers s.n. [Mai 1901] (Bz--17380);
Hallier 269 (Bz--17330, Bz--17331, Ut--53170), s.n. [16.VIII.
 1896] (Bz--17329, Bz--17332); Hardenberg s.n. (Bz--17403); Herb.
Hort. Bot. Bogor. s.n. [Japara] (Bz--17401), s.n. (Bz--17323);
Jensen s.n. (Cp); Karta 147 (Bz--17428); Koorders 9706b (Bz--
 17428); Koorders 9706b (Bz--17424), 21928b [91*] (Bz--17409),
21998 [39*] (Bz--17408), 22505b [2348*] (Bz--17411, Bz--17412),
26211b [154*] (Bz--17421, Bz--17422), 27608b [588*] (Bz--17410),
28471b [738*] (Bz--17419), 28478b [648*] (Bz--17420), 29595 (Bz--
 17418), 29935b (Bz--17425, Bz--17426), 32377b [2628*] (Bz--17423),
33682b (Bz--17416, Bz--17417), 35734b [2168*] (Bz--17414), 35735b
 (Bz--17415), 42647b [365*] (Bz--17413); F. Kramer 32 (Bz--17377,
 Bz--17378); Lörzing 783 (Bz--17376), 983 (Bz--17375, Bz--17379);
Mousset 1055 (Bz--17405); Oosten 15 (Bz--17306); Ploem s.n. [Java
 occid.] (Bz--17364, Bz--17365); Rant 44 (Bz--17311, N-photo, Z--
 photo); Scheffer s.n. (Bz--17366, Bz--17367); Thorenaar 319 (Bz--
 17336, Bz--17337); Thunberg s.n. (S); Ultée 9 (Bz--17324), 34 (Bz--
 17362); Van Steenis 5299 (Bz--17315); Vorderman s.n. [Batavia]
 (Bz--17370, Bz--17371, Bz--17372); Wisse 19 (Bz--17385), 794 (Bz--
 17325), 827 (Bz--17304). Kangean: Backer 26851 (Bz--17430), 27462
 (Bz--17440, Bz--17441, Bz--17442, Bz--17443), 27744 (Bz--17444),
 Bz--17445), 28113 (Bz--17431); Dommers 94 (Bz--17438), 166 (Bz--
 17437). Madura: Backer 18943 (Bz--17446), 19512 (Bz--17449),
19800 (Bz--17447), 20499 (Bz--17448). Paliat: Backer 29521 (Bz--)

17436). Saboenting: Backer 29790 (Bz—17439). Saoebi: Mahlmeister 21 (Bz—17429, Bz—17432). Sepandjang: Backer 28803 (Bz—17435). Sepapan: Backer 28438 (Bz—17433, Bz—17434). Sumatra: De Vriesse s.n. (K). LESSER SUNDA ISLANDS: Soemba: Iboet 292 (Bz—17450, Ut—1698a). Sumbawa: Rensch 769 (Bz—17451). Timor: Castro 2 (Bz—17457, Bz—17458); Grijp 2 (Bz—17452, Bz—17453); Teijsmann 8922 (Bz—17456); Voogd 2255 (Bz—17454). AUSTRALIAN REGION: AUSTRALIA: Queensland: Collector undetermined s.n. [Edge-water Bay] (Bz—17466); Macgillivray 76 (Go). AUSTRALIAN ISLANDS: Hayman: C. T. White 10166 (N, N). CULTIVATED: France: Bouton s.n. [1835] (Br); Herb. Hort. Malmaison s.n. (B); Herb. Hort. Paris s.n. (Br); Herb. Kummer s.n. (Mu—1429). Germany: Herb. Kummer s.n. (Mu—1430); Herb. Schwägrichen s.n. (Mu—1428). India: Wallich 328 (Cp), s.n. (Cp, S). Java: Herb. Hort. Bot. Bogor. s.n. (Bz—17299). Réunion: Richard s.n. [Jard. Bot. de Bourbon] (P, P, P). Trinidad: Herb. Hooker s.n. (Mi—photo). LOCALITY OF COLLECTION UNDETERMINED: Collector undesigned 30 (Q); Herb. Alstroemer iv (S); Herb. Burman s.n. (Le); Herb. Lugd.-Bat. 908.265-1444 (Le), 908.265-1454 (Le); A. Richard 674 (Du—166515). MOUNTED ILLUSTRATIONS: Ferd. Bauer, Icon. Nov. Holl. 964 (V), 964a (V), s.n. (V).

CALICARPA CANDICANS f. LACINIATA Moldenke, Phytologia 4: 125. 1952.

Bibliography: Moldenke, Phytologia 4: 124 & 125. 1953; Moldenke, Biol. Abstr. 27: 984. 1953; Moldenke, Résumé 196 & 443. 1959.

This form differs from the typical form of the species in having its leaf-blades incised-laciniate along the margins.

The type of the form was collected by Maria Ernestine Walsh-Held (no. 474) at Nipel, Timor, on April 18, 1929, and is deposited in the Herbarium Bogoriense at Buitenzorg. Thus far the taxon is known to me only from the type collection, of which 1 herbarium specimen and 2 mounted photographs have been examined.

Citations: INDONESIA: LESSER SUNDA ISLANDS: Timor: Walsh-Held 474 (Bz—17455--type, N—photo of type, Z—photo of type).

CALICARPA CANDICANS var. PERRYANA (Dop) Moldenke, Phytologia 2: 310. 1947.

Synonymy: Callicarpa cana var. perryana Dop, Bull. Soc. Hist. Nat. Toulouse 64: 504. 1932.

Bibliography: P. Dop, Bull. Soc. Hist. Nat. Toulouse 64: 504. 1932; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 59 & 86. 1942; Moldenke, Phytologia 2: 310 & 344. 1947; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 135 & 177. 1949; Moldenke, Résumé 175, 242, & 443. 1959.

This variety differs from the typical form of the species in having its leaf-blades obovate or ovate-elliptic, rounded and shortly acuminate at the apex, and conspicuously and irregularly serrate along the upper portions of the margins.

The type of this variety was collected by G. E. Perry — in whose honor it is named — at Poulo Condor, Cochinchina, Indochina. I know nothing of the taxon except what is said of it in the literature. It is apparently known only from the original collection.

CALLICARPA CANDICANS var. **SUMATRANA** (Miq.) Moldenke, Phytologia 4: 125. 1952.

Synonymy: Callicarpa sumatrana Miq., Fl. Ind. Bat. 2: 886. 1856. Callicarpa chinensis Hort. ex C. K. Schneid., Illustr. Handb. Laubholzk. 2: 594, nom. nud. 1911. Callicarpa cana var. sumatrana (Miq.) H. J. Lam, Verbenac. Malay. Arch. 71. 1919.

Bibliography: Sims in Curtis, Bot. Mag. 47: pl. 2107. 1819; Miq., Fl. Ind. Bat. 2: 886. 1856; Jacks. in Hook. f. & Jacks., Ind. Kew. 1: 386. 1893; C. K. Schneid., Illustr. Handb. Laubholzk. 2: 594. 1911; H. J. Lam, Meded. Rijksherb. Leid. 37: 32. 1914; H. J. Lam, Verbenac. Malay. Arch. 71. 1919; Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 20. 1921; A. W. Hill, Ind. Kew. Suppl. 7: 36. 1929; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 56. 1932; Moldenke in Fedde, Repert. Spec. Nov. 40: 109. 1936; Moldenke, Phytologia 4: 121—125. 1952; Moldenke, Biol. Abstr. 27: 984. 1953; Moldenke, Résumé 160, 168, 174, 175, 187, 189, 195, 213, 242, 247, & 443. 1959; Moldenke, Résumé Suppl. 3: 19 & 20 (1962) and 6: 8. 1963; Moldenke, Dansk Bot. Arkiv 23: 87. 1963; Moldenke, Résumé Suppl. 14: 3. 1966.

Illustrations: Sims in Curtis, Bot. Mag. 47: pl. 2107 [in color]. 1819.

This variety differs from the typical form of the species in having its corolla-lobes densely white-tomentose on the outer surface, the leaf-blades oblong or lanceolate-ovate, 6.5—18.5 cm. long, 3—10 cm. wide, acuminate or attenuate at the apex, attenuate at the base, and denticulate along the margins except at the base, and the petioles 0.5—2.5 cm. long.

The leaf-blades are membranous or subchartaceous, glabrous above when mature, densely white-tomentose beneath, the secondaries 8—10 per side. Recent collectors describe the plant as a woody erect shrub, tall or straggling shrub, or even a subshrub, 0.5—4 m. tall, the trunk 1 cm. in diameter, the leaves "stinking, hot-scented, bitter", their blades dark-green, gray beneath, the flowers ill-smelling, the corolla pink or pinkish to pale-lilac, mauve, purple, or red, and the fruit green when immature, deep-violet or deep-purple to purple-black or black when mature, small, 1/4 inch in diameter, sweet.

The type of the variety was collected by Johannes Elias Teijemann (no. 1159 H.B.) in Sumatra and is deposited in the Herbarium Bogoriense at Buitenzorg. I have examined the type and two iso-types and find the original labels inscribed "183", "324", and "41d".

Lam (1919) describes this taxon as follows: "var. sumatrana (Miq.) H. J. Lam (C. albida Blume, C. sumatrana Miq.) — folia membranacea, vel subchartacea, lanceolate-ovata, basi attenuata, integra, apice acuminata, margine denticulata, adulta supra gla-

bra, subtus dense albido-tomentosa, nervis utrinque 8--10; 6 1/2-12 (-18 1/2) cm. longa, 3--4 1/2 (-10) cm. lata; petiolo 1-2 1/2 cm. longo; corolla pilis densis in vittis 4 in lobis positis, tecta." He cites: MALAYA: Malacca: Griffith s.n. (Le-908.265-1440). Penang: Delessert s.n. (Le-908.265-1424). INDONESIA: GREATER SUNDA ISLANDS: Banka: Collector undetermined s.n. (Ut-49888). Celebes: Elbert 2538. Java: Junghuhn s.n. (Ut-49887); Zollinger 35 & 157. Sumatra: Junghuhn s.n. (Le-908.266-808); Korthals s.n. (Bz-1159, Bz-3084, Le-908.265-1092, Le-908.265-1100, Le-908.265-1426, Le-908.265-367, Le-908.266-12680). He comments that "Perhaps there is a more glabrous form, belonging to this variety [Le-908.266-1268]; it seemed to us, however, not conspicuous enough, to base upon it a new forma. There are transition forms to var. γ and δ [longifolia & latifolia]. It is distinguished from C. longifolia, with which it is nearly conform in regard to the leaves by the always tomentose, never laxely floccose texture of the lower side of the leaves, and its hairy corolla".

Bakhuizen van den Brink (1921) describes the variety as "Corolla on the lobes densely white tomentose outside; leaves oblong or lanceolate-ovate, attenuate, at both ends, margins small-denticulate; 10-15 cm. long, 3-10 cm. wide; petioles 0.5-2 cm. Sumatra: Padang (TEYSM. 1159; 3084); Lampong (TEYSM 4381). Distribution: Sumatra! Malacca! Bengal!"

It will be noted that Lam (1914, 1919) includes C. albida Blume in the synonymy of this taxon, but I place this in the synonymy of C. longifolia Lam. P'ei (1932) lists C. chinensis Hort. as a doubtful species. He apparently regards the present taxon as the typical C. candicans, since he cites for his C. cana the C. Ford s.n., A. Henry s.n., Tsang 83 & 315 [as "515"], and Chun 1554 cited by me below as var. sumatrana. Bakhuizen van den Brink (1921) regards plate 2107 in Curtis, Bot. Mag. (1819) as representing this variety, and dates it "1820". Sims (1819) originally described the plant depicted in his illustration as follows: "That the Callicarpa tomentosa of Lamarck is the same plant with Callicarpa cana of the Mantis, Retzius affirms on the authority of a specimen received from the author himself. The specific name of tomentosa has been since applied to a different species. Our plant differs from americana in having the stems and underside of the leaves much more tomentose, and especially in having the racemes more lax, the berries in the latter being crowded together so as to look like one fruit; from whence it has been called the Bermudian mulberry."

"Native of Malabar, Cochinchina, Java, Sumatra, and the straits of Sunda. Requires to be kept in the stove. Introduced to the Kew Garden in 1790, by the Right Hon. Sir Joseph Banks, Bart. K. B.; but does not appear to have blossomed there at the time of the publication of the Hortus Kewensis, in 1810. Our drawing was taken from a plant communicated by Messrs. Barr and Brookes in

June 1818, from their very extensive collection at the Northampton Nursery, Newington Green." His calling the inflorescences of this plant "racemes" is an amazing error, since they are typical cymes.

Collectors have found this plant growing in sandy soil or loam, on dry level land, open slopes, open hillsides, and rough limestone hills, along roadsides, in forests, village commons, low sandy riverbeds, and dry ground, at altitudes of sea-level to 1700 meters, flowering from March to June and September to November, fruiting in March, June, July, and November. Lau describes it as "fairly common" in sandy soil of thickets on steep slopes and as "fairly common scattered shrubs" on Hainan Island; Lei calls it "scattered shrubs in village greens" but "fairly common" or "abundant", and Chun refers to it as "common" on the same island. Henderson reports it "common amongst boulders" in Malaya, and Sindhipongse calls it "common in deciduous forests" in Thailand. Chun describes it as an "herb", but this is surely an error in observation. Henderson says "fruit white", but there are only flowers (no fruit!) on the sheet bearing this label, so I question the accuracy of the statement — no other white-fruited examples of this species have been reported thus far, although it would not be surprising to find such a form. White-fruited forms are well-known in numerous other species of the genus. The vernacular names "khao tawk" and "tampa besi" are recorded.

The flowers are described as "red" on Lau 1026 and Tsang [Tak] 315, "pinkish" on Chun 1554, "pink" on Lau 139, Lei 155, and Liang 61557 & 66541, "purple" on Sindhipongse 76, "mauve" on Mrs. D. J. Collins 2340 and M. R. Henderson 18202, and "pale-lilac" on Squires 188.

Material has been misidentified and distributed in herbaria under the names C. cana L., C. candicans (Burm. f.) Hochr., C. giraldiana Hesse, C. longifolia Lam., and even Urticaceae!

In all, 105 herbarium specimens, including the type of two of the names involved, and 3 mounted photographs and illustrations have been examined by me.

Citations: INDIA: West Bengal: Griffith s.n. [Bengal] (Bz-17483); Kurz s.n. [Sibpore, 5/67] (Bz-17482). CHINA: Kiangsi: Tsiang 10342 (N). CHINESE COASTAL ISLANDS: Hainan: W. Y. Chun 240 [Herb. Univ. Nanking 5646] (Ca-233793), 1554 [Herb. Univ. Nanking 6751] (Ca-242623), s.n. [Herb. Univ. Nanking 5805] (Ca-233793); C. Ford s.n. (N); A. Henry s.n. [Hainan, 28.3.93] (N); S. K. Lau 139 (B, Ca-525256, I, Mi, N, W-1629209), 1026 (N), 2801 (Bi, S), 3379 (Bi, S); Lei 155 (B, Ba, Bi, Bz-17467, Ca-612232, N), 731 (Ba, Bi, Bz-17468, Ca-612572, N); Liang 61557 (B, N, W-1669691), 61931 (N, S, W-1670749), 64567 (N), 65228 (Go, N), 66541 (N); Tsang [Tak] 83 [Herb. Lingnan Univ. 15582] (Ca-315771, N, W-1248844), 315 [Herb. Lingnan Univ. 17064] (Ca-356897, N, W-1659666); Wang 33351 (N). THAILAND: Mrs. D. J.

Collins 1252 (W--1701060), 2340 (W--1701677); K. Larsen 9168 (Z); Sindhipongse 76 [Herb. Roy. Forest Dept. 6020] (W--2064828). IN-DOCHINA: Annam: Clemens & Clemens 4140 (Ca--340720, Gg--156315, Mi, N, Ut--51a, W--1427862); C. B. Robinson 1273 (N, W--713355); Squires 188, in part (Ca--305962, La), 791 (Bz--17470, N, S). Cochinchina: Pierre 5225 (B, Bz--72839, Ca--38108, Ca--54657, N, S, S, W--1758015); Squires 188, in part (Bz--17484, W--1425737); Thorel 719 (B, Ca--54656, W--1758020). Laos: F. K. Ward 8911 (N).

BOOK REVIEW

Alma L. Moldenke

"Fundamental of Phytomorphology" by A. D. J. Meeuse, xi & 231 pp., illus. Ronald Press Company, New York, New York 10010. 1966. \$10.00

Herein the author champions the New Morphology promulgated by H. H. Thomas in 1931 and documented primarily by Hagerup, Fagerlind, Lam, Neumayer, Wettstein, Corner, Bower, Church, Fritsch and the author who hold that the Angiosperms have descended polyphyletically through several parallel evolutionary lines that were probably distinct by the early Mesozoic in gymnospermous-chlamydospermous-Bennettiales form. The loser, slain by sharp deductive logic, references to morphogenesis and reinterpretations of fossil material, is the Old Morphology with its monophyletic and sporophyll approach.

The single main force evoking adaptation through positive selective tendencies was the advent of entomophily and it resulted in the universal trend of angiospermy or the development of the gynoecia into closed structures. The female cycadopsid gymnosperm prototypes had developed ovules that were fertilized by siphonogamy leading to an early stage of double fertilization, bitegmic with a third layer of cupular origin, borne in groups on a supporting gynoclad, and subtended by a bract or stegophyll. The encasing of the ovules required the formation of stigmatic areas from ovular coats and/or carpel walls and eventual stylar extensions.

The male cycadopsid prototype became similarly arranged in compound androclads also subtended by bracts. These androclads and the gynoclad separately or together, with some sterile leafy organs, formed strobiloid anthocorms. There were subsequent reductions and differentiations producing flowers. The very last paragraph in the book is a plea to paleobotanists to hunt for such Protangiosperm fossils.

There is much meat here for discussion and many ideas for interesting speculation.